



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

## COURSE CONTENT

CLOUD COMPUTING								
V Semester: CSE (DS)								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
ACDD11	Elective	L	T	P	C	CIA	SEE	Total
		3	0	0	3	40	60	100
Contact Classes: 48	Tutorial Classes: Nil	Practical Classes: Nil			Total Classes: 48			
Prerequisites: There are no prerequisites to take this course.								

### I. COURSE OVERVIEW:

The course is designed to introduce to the basics of IoT. The main objective of the course is to teach a range of topics and concepts related to the IoT, Cloud Computing for IoT, Machine Learning Paradigms for IoT, IoT Security. This course reaches to student by power point presentations, lecture notes, and lab which will give you the chance to apply knowledge on Working of IoT.

### II. COURSE OBJECTIVES:

#### The students will try to learn:

- I The foundational concepts, architecture, and economic models of cloud computing, including virtualization and cloud deployment models.
- II The cloud platforms and services, and their application in industry for building scalable and distributed systems.
- III The various security challenges and service level agreements (SLAs) in cloud computing and understand best practices for data protection and policy-based management.

### III. COURSE OUTCOMES:

- CO1 Understand the basic concepts and architecture of cloud computing.
- CO2 Analyze various cloud service and deployment models and their use cases.
- CO3 Demonstrate the working of virtualization and its role in cloud environments.
- CO4 Develop simple cloud-based applications using cloud platforms and tools.
- CO5 Evaluate security, privacy, and compliance issues in cloud environments.
- CO6 Compare different commercial cloud platforms (like AWS, Azure, Google Cloud) and their services.

#### **IV. COURSE CONTENT:**

##### **MODULE–I: INTRODUCTION (10)**

Cloud computing at a glance, Historical developments, Building cloud computing environments. Cloud Computing Architecture - The cloud reference model, Types of clouds, Economics of the cloud, Open challenges.

##### **MODULE–II: VIRTUALIZATION (10)**

Characteristics of virtualized environments, Taxonomy of virtualization techniques, Virtualization and cloud computing, Pros and cons of virtualization, Technology examples- Xen, VMware, Microsoft Hyper-V. Migrating into a Cloud, Virtual Machines Provisioning and Migration Services.

##### **MODULE – III: CLOUD PLATFORMS IN INDUSTRY (8)**

Amazon web services, Google AppEngine, Microsoft Azure, Aneka-Integration of private and public cloud.

Cloud Applications: Scientific applications, Business and consumer applications.

##### **MODULE – IV: SECURITY IN THE CLOUD (10)**

Cloud Security Challenges, Software-as-a-Service Security. Secure Distributed Data Storage in Cloud Computing - Cloud Storage: from LANs TO WANs, Technologies for Data Security in Cloud Computing.

Data Security in the Cloud- The Current State of Data Security in the Cloud, Cloud Computing and Data Security Risk, Cloud Computing and Identity, The Cloud, Digital Identity, and Data Security, Content Level Security-Pros and Cons

##### **MODULE – V: SLA MANAGEMENT (10)**

Traditional Approaches to SLO Management, Types of SLA, Life Cycle of SLA, SLA Management in Cloud, Automated Policy based Management. Common Standards in Cloud Computing - The Open Cloud Consortium, Distributed Management Task Force, Standards for Application Developers, Standards for Messaging, Standards for Security.

#### **V. TEXTBOOKS:**

1. Rajkumar Buyya, Christian Vecchiola and S.ThamaraiSelvi, Mastering Cloud Computing: Foundations and Applications Programming, McGraw Hill Education, 2013.
2. Rajkumar Buyya, James Broberg and Andrzej, Cloud Computing: Principles and paradigms Wiley, 2011.
3. John W. Rittinghous and James F. Ransome, Cloud Computing: Implementation, Management and Security by CRC, 2010.

#### **VI. REFERENCE BOOKS:**

1. Kai Hwang, Geoffery C.Fox, Jack J Dongarra and Elsevier, “Distributed and Cloud Computing”, 2012.
2. Kannammal, Fundamentals of Cloud Computing, CL India, 2015.
3. Tim Mather, Subra Kumaraswamy and Shahed Latif, “Cloud Security and Privacy”, An Enterprise Perspective on Risks and Compliance”, Publisher: O’Reilly Media 2009.

#### **VII. WEB REFERENCES**

1. <https://ramslaw.files.wordpress.com/2016/07/0124114547cloud.pdf>
2. <http://www.chinacloud.cn/upload/2011-07/11073107539898.pdf>
3. <https://eni2017.files.wordpress.com/2017/03/distributed-andcloud-computing.pdf>
4. <https://aws.amazon.com/>
5. <https://cloud.google.com/>

## VIII. MATERIALS ONLINE

1. Course template
2. Tutorial question bank
3. Tech talk topics
4. Open-ended experiments
5. Definitions and terminology
6. Assignments
7. Model question paper – I
8. Model question paper – II
9. Lecture notes
10. PowerPoint presentation
11. E-Learning Readiness Videos (ELRV)